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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/687,998

10/17/2003

Francisco J. Duarte

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7590

07/20/2006

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EXAMINER

MENEFEER, JAMES A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,998	Applicant(s) DUARTE, FRANCISCO J.	
	Examiner James A. Menefee	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

By amendment filed 5/2/2006, the specification is amended, replacement drawing sheets are received and accepted, and claims 1, 8, 13, 15, and 16 are amended. Claims 1-17 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duarte, Dye Laser Principles, 1990 (herein "Duarte") in view of Koechner (US 4,357,704), and further in view of Canady (US 6,836,502).

Regarding claim 1, Duarte discloses in Fig. 4.11 (p. 148) a laser for emitting a beam of coherent light along an optical axis comprising first and second optical elements M and Grating, a flashlamp pump for producing a beam of light transverse to the optical axis of the laser, a gain medium disposed in the optical axis and the excitation path for producing a beam of coherent light.

There is not disclosed a guiding member for directing the pump light toward the gain medium, the guiding member being hollow and having an internal reflective surface wherein the propagation is in air or vacuum. Koechner teaches such a guiding member 7 for guiding pump light from a pump source 6 into a gain medium 5, the guiding member being hollow with an

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internal reflective surface wherein the propagation is in air or vacuum. See Koechner Figs. 1-2 and discussion. The pump source may be light emitting diode. See Koechner claim 2. While Koechner is concerned with pumping of a solid state gain medium, the principles are similarly applicable to pumping of a dye medium. It would have been obvious to one skilled in the art to use such a pumping scheme using such a guiding member because it provides for more optimal coupling between the pump source and the gain medium, as taught by Koechner. See, e.g., col. 2 lines 20-27.

As noted above, the pump source in Duarte is a flashlamp, not an LED. Canady teaches that it is known for LEDs to pump dye doped media, and further that LEDs are advantageous over incandescent devices, i.e. flashlamps. It would have been obvious to one skilled in the art to use LEDs for pumping rather than flashlamps, because LEDs are modulatable as taught by Canady. Col. 1 lines 41-46, col. 1 line 65 – col. 2 line 8.

Regarding claims 2-3, Koechner's obvious guide member is reflective and is disposed between the pump and the gain medium.

Regarding claims 4-6, Duarte discloses that dye gain media can be solid or liquid. See par. bridging pages 18-19. Plastic, a polymer, is disclosed as one of the solids.

Regarding claim 7, Duarte discloses dye cells may have a planar side that faces the pump. See p. 254-55.

Regarding claim 8, due to Koechner's concentrator the beam of light will have a high angle of incidence.

Regarding claim 9, Duarte uses a multiple prism beam expander in Fig. 4.11.

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Regarding claims 11-12, Koechner's obvious guiding member includes opposing angled sides forming an opening in the excitation path opposite the pump and proximate the gain medium.

Regarding claim 13, the method of operation is disclosed similarly to the devices above.

Regarding claim 14, the device is a laser and therefore there will be repeated reflection.

Regarding claim 15, Duarte's device uses grazing incidence. See Fig. 4.11(b).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duarte, Koechner, and Canady as applied to claim 1 above, and further in view of Duarte (US 5,181,222, herein "Duarte II"). The limitations of claim 1 are taught as above. It is not taught that one of the optical elements is an output coupler polarizer. Duarte II teaches that in a similar dye laser the output mirror may be replaced by an output coupler polarizer. It would have been obvious to one skilled in the art to use such a polarizer because it substantially reduces unwanted ASE, as taught by Duarte II.

Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duarte in view of Canady, and further in view of Tessler et al. (US 6,777,706). See the section 103 rejections of claims 1 and 6 above,¹ which show Duarte and Canady teach all of these limitations, except they do not teach the gain medium is a nanoparticle.

Tessler teaches that a dye doped nanoparticle laser gain medium is known in the art. See Example 4, cols. 15-16. While Tessler does not explicitly give a reason for using nanoparticles, it

¹ Claim 16 does not require the guiding member, therefore the Koechner reference is not used in this rejection.

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would have been obvious to one skilled in the art to do so because of the advantages inherent in nanotechnology. An example would be the benefits associated with the miniaturization itself, such as increases in speed and reduction in power consumption.

Response to Arguments

Applicant's arguments filed 5/2/2006 ("Remarks") have been fully considered but they are not wholly persuasive.

Applicant's arguments are persuasive that the amendments overcome the various objections to the specification, drawings, claims, as well as the 35 USC 112 rejection. See Remarks at 7.

Applicant's arguments are persuasive that the 35 USC 102 rejection based on Kuper (US 4,949,346) and the 35 USC 103 rejection based in part on Usui et al. (US 6,038,244) should be withdrawn due to applicant's amendment that the guiding member must be hollow and propagation is through air or vacuum. Remarks at 8-9. The propagation in both Kuper and Usui is through solids, and there is no suggestion to instead use a hollow guide.

Applicant's only arguments against the rejections of claims 16-17 are that the claims depend on claim 13 and are allowable for the same reason. See Remarks at 8, 10. This is incorrect; claim 16 is clearly an independent claim with claim 17 dependent on it. Nonetheless, the prior rejections are altered in light of applicant's amendment to claim 16.

Conclusion

Phua et al. (US 7,058,102) is cited because it shows another pump light concentrator where propagation is through air.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



James Menefee
Primary Examiner
July 13, 2006